

## MUSICAL AND ILLUMINATING JUMP ROPE

### BACKGROUND OF THE INVENTION

[0001] This invention relates generally to a jump rope and, more particularly, this invention is directed to an illuminating jump rope that plays music.

[0002] Jump ropes have traditionally been used for entertainment and exercise. Jump ropes generally include a flexible line having a handle at each end of the line. A person using the jump rope will grasp the handles and rotates the flexible line around the body of the user. The user jumps over the line as it rotates near the feet of the user. The user skips and jumps over the rope.

[0003] There have been attempts in the past to provide an illuminated jump rope. Lights can be provided in the jump rope handles but traditionally attempts are made to provide the lights along the flexible line of the jump rope. The illuminated jump rope enhances the enjoyment of the person using the jump rope and the people watching the jump rope.

[0004] A series of light bulbs are spaced within a hollow tubular rope with a power source in one of the two handles to form an illuminated jump rope in US Patent Number 5,389,056.

[0005] Variable lengths of optical fiber within a hollow tubular rope with a light source in one of the two handles form an illuminated jump rope in US Patent Number 4,529,193 and US Patent Number 5,842,766.

[0006] A series of light emitting diodes are spaced within a hollow tubular rope with a power source in one of the two handles to form an illuminated jump rope in US Patent Number 4,776,585.

[0007] There have also been attempts in the past to provide a musical jump rope. A music player is provided in one of the jump rope handles so the person using the jump rope can skip and jump to the music.

[0008] A jump rope handle can play separate beat and music tracks in US Patent Number 6,409,636.

[0009] Alternately, rotation of the rope provides the beat rhythm for the music in US Patent Number 5,533,947 where one note is played for each turn of the jump rope.

[0010] A jump rope can play music and provide lights through incandescent bulbs from one handle in US Patent Number 6,001,048.

[0011] It is an object of this invention to provide a jump rope that plays music from one handle with an illuminated jump rope between the two handles.

## SUMMARY OF THE INVENTION

[0012] According to the present invention, a musical and illuminated jump rope has flexible hollow tubing with a first handle at one end of the tubing and a second handle at the opposite end of the tubing. A plurality of light emitting diodes are positioned within the tubing. Within the first handle are at least one battery, an on/off switch, a control circuit, a music chip with pre-programmed music, beat tracks or sound and a speaker.

[0013] Current from the battery through the control circuit drives the music chip and speaker to play music for the jump rope and drives the light emitting diodes to emit light providing illumination from the jump rope.

[0014] The music chip is replaceable through a hatch on the first handle. The battery is replaceable through a hatch on the first handle.

[0015] Other aspects of the invention will become apparent from the following more detailed description, taken in conjunction with the accompanying drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The preferred embodiments of this invention will be described in detail, with reference to the following figures wherein:

[0017] FIG. 1 is a perspective view of the musical and illuminated jump rope of the present invention.

[0018] FIG. 2 is a cross-sectional side view of the light emitting diodes inside the hollow tubing of the musical and illuminated jump rope of FIG. 1.

[0019] FIG. 3 is a side view of the handle for the musical and illuminated jump rope of FIG. 1.

[0020] FIG. 2 is a cross-sectional top view of the handle for the musical and illuminated jump rope of FIG. 1.

#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0021] Reference is now made to FIG. 1 illustrating a musical and illuminated jump rope 10 comprising a flexible durable hollow tubing 12 (which constitutes the "rope") with a first handle 14 at one end 16 of the tubing and a second handle 18 at the opposite end 20 of the tubing.

[0022] The flexible durable hollow tubing 12 is constructed of light transmissive material, preferably translucent or transparent, such as plastic, PVC, resin, or nylon. The tubing 12 for the jump rope 10 must be long enough to easily be rotated around a human body as a half-loop, while the handles 14 and 16 are held in opposite hands of the user. However, the tubing 12 can be manufactured in varying lengths so as to accommodate different sized users, ranging from children to adults. In addition, it can also be manufactured long enough to allow two or more people to jump simultaneously.

[0023] As shown in FIG. 2, a plurality of light emitting diodes 22 are securely positioned and spaced within the tubing 12 to provide the illumination for the jump rope. Each light emitting diode is connected in parallel with each other light emitting diode. The light emitting diodes may be evenly spaced, or unevenly spaced, or spaced in clusters, as desired for required optical effect when emitting light and being rotating during the jumping of the rope.

[0024] A first lighting wire 24 and a second lighting wire 26 connect the light emitting diodes 22 to the control circuit and power source in the first handle.

[0025] When driven by the power source, the light emitting diodes 22 emit light 28. The light will be emitted through the light transmissive material of the tubing 12. The light emitting diodes may emit light of the same color, different colors, contrasting colors or alternating colors, as desired.

[0026] Returning to FIG. 1, the first and second handles 14 and 18 are formed from a suitable material such as a hard plastic. The handles are formed in the shape of a hollow cylinder with a closed end 30 on the side of the handle opposite the tubing 12 and an opposing end 32 on

the side of the handle adjacent to the tubing 12, which is closed except for the aperture with the tubing entering the handle.

[0027] As seen in FIG. 2, the handle 14 has a top section 34 and a bottom section 36. The top section 34 and the bottom section 36 are secured together to form the handle 14 (or the handle 18) by adhesive, screws, spot-welds, chemical bonds, heat bonds, snap-togethers or any other conventional fastening means.

[0028] As shown in FIG. 3 and FIG. 4, the music and illumination device 38 for the jump rope 10 is enclosed within the hollow first handle 14 and consists of a control circuit 40, a music chip 42, a speaker 44, an on/off switch 46, all mounted on a printed circuit board 48, at least one battery 50 as a power source in a battery compartment 52 and the first and second lighting wires 24 and 26 from the light emitting diodes in the tubing of the jump rope.

[0029] The top section 34 of the first handle 14 has an aperture 54 through which the on/off switch 46 extends from the circuit board 48 within the handle to outside the handle to allow the user to turn the music and illumination device inside the handle on and off.

[0030] The control circuit, the music chip, the speaker, the on/off switch, the battery, and the first and second lighting wires for the light emitting diodes are wired in series or series-parallel. All wiring is done on or through the printed circuit board 48. The printed circuit board 48 is fastened to the bottom section 36 of the handle 14 by adhesive, screws, spot-welds or any other conventional fastening means.

[0031] The first and second lighting wires 24 and 26 extend from the tubing 12 into the handle 14 to the control circuit 40. A first power circuit wire 56 extends from the control circuit 40 to the battery 50. A second power circuit wire 58 extends from the battery 50 to the on/off switch 46. A third power circuit wire 60 extends from the on/off switch 46 to the control circuit 40. The light emitting diodes, the control circuit, the battery and the on/off switch form the lighting circuit for the illumination of the jump rope.

[0032] Current from the battery flows through the control circuit to drive the light emitting diodes to emit light providing the illumination from the jump rope.

[0033] The music chip 42 is a solid-state electronic memory device which is pre-programmed to produce music, beat tracks, sound effects, sound segments or the like.

[0034] A first music chip wire 62 and a second music chip wire 64 extend from the control circuit 40 to the music chip 42.

[0035] The speaker 44 is a commercially available speaker, which fits within the handle. The music chip drives the speaker to produce the pre-programmed music or sounds. Speaker holes 66 in the handle 14 allow the music or sounds from the speaker to be clearly heard by the user or other people near the jump rope.

[0036] A first speaker wire 68 and a second speaker wire 70 extend from the music chip 42 to the speaker 44.

[0037] The speaker, the music chip, the control circuit, the battery and the on/off switch form the music circuit for the musical performance of the jump rope.

[0038] Current from the battery flows through the control circuit to drive the music chip and the speaker to play music from the jump rope.

[0039] The handle 14 has a music chip hatch 72, which allows a user to remove the music chip 42 and replace it with a new different music chip with different pre-programmed music or sounds. The hatch can be along the top surface of the handle or on the closed end of the handle.

[0040] The music chip hatch may have a screw (not shown) to fasten the hatch to the housing or have a snap-cover (not shown) flush with the outer surface of the handle.

[0041] The battery compartment 52 may be electrically connected to the control circuit 40, via a first power circuit wire 56 from the control circuit 40 to the battery 50, a second power circuit wire 58 from the battery 50 to the on/off switch 46 and a third power circuit wire 60 from the on/off switch 46 to the control circuit 40. The battery compartment 53 may be adapted to hold two AA batteries 50, which may be connected in series to provide current to the control circuit for the lighting circuit and the music circuit.

[0042] The batteries 50 are held in the battery compartment 52 in a series connection with each other. The first power circuit wire 56 is connected to the positive terminal of one of the batteries while the second power circuit wire 58 is connected to the negative terminal of the other battery.

[0043] The handle 14 has a battery hatch 74, which allows a user to remove the batteries 50 and replace them with fresh batteries. The hatch can be along the top surface of the handle or on the closed end of the handle.

[0044] The battery hatch may have a screw (not shown) to fasten the hatch to the housing or have a snap-cover (not shown) flush with the outer surface of the handle.

[0045] The battery, the on/off switch and the control circuit form the power circuit to provide current to drive the illumination of the light emitting diodes and music playing by the music chip and speaker of the jump rope.

[0046] The jump rope has an on/off switch 46 located on the first handle 14. A user would use the on/off switch 46 to turn power on or off to the plurality of light emitting diodes and the music chip. The on/off switch is an external slide switch to make and break electrical contact between the second and third power circuit wires 58 and 60 on the circuit board 48 within the handle. Making the contact establishes a flow of current between the batteries and the diodes and the music chip through the switch so as to attain the intended illumination and playing of music of the jump rope.

[0047] The second handle 16 does not have a music and illumination device. The tubing in the second handle forms a closed physical loop with the lighting wires forming a closed electrical loop. The second handle may contain a dead weight to counterbalance the weight of the music and illumination device in the first handle.

[0048] The on/off switch can be momentary, push button, pressure sensitive, rotating, rotating momentary, variable resistance switches consisting of rotating, pressure sensitive, or momentary rotating.

[0049] The control circuit can be a simple blinker circuit for the lighting circuit with a specified or variable repetition rate and a specified or variable duty cycle to turn the light emitting diodes on and off to illuminate the jump rope. The control circuit can also set or vary the intensity of the light emitted by the light emitting diodes and consequentially set or vary the intensity of the light illuminating the jump rope. The control circuit can provide other more complex light patterns for the light emitting diodes and the illumination of the jump rope.

[0050] The music chip could alternately be tapes, CDs or other replaceable pre-programmed music and sound storage devices.

[0051] Alternately, two switches could be used for the musical and illuminated jump rope 10 of the present invention. The first switch can be in the music circuit between the control circuit and the music chip. The second switch can be in the lighting circuit between the control circuit and the light emitting diodes. These two switches provide separate power circuits for the music circuit and the lighting circuit allowing individual and separate control of the illumination and music playing of the jump rope.

[0052] Alternately, each light emitting diode could be individually wired to the control circuit allowing the control circuit to individually control the intensity and duration of the illumination from that individual light emitting diode. The control circuit can provide other more complex light patterns for the light emitting diodes and the illumination of the jump rope.

[0053] While this invention has been described in conjunction with the specific embodiments outlined above, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art. Accordingly, the preferred embodiments of the invention as set forth above are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention as defined in the following claims.